

What is claimed is:

1. A lift braking system comprising:

a winder having a load supporting cable wound thereon;

a threaded shaft;

a torsion tube disposed about and threadably interengaged with said shaft such that said tube is moved longitudinally relative to said shaft when said tube is turned axially about said shaft; said tube being operably connected to said winder such that axial rotation is transmitted between said tube and said winder; said tube carrying a first brake component;

a rotatable ratchet for supporting a complementary second brake component adjacent said first brake component;

a pawl that cooperates with said ratchet for restricting rotation of said ratchet in a first direction and allowing rotation of said ratchet in an opposite second direction; and

a motor for axially rotatably driving said shaft selectively in opposing directions for respectively raising and lowering the load; said tube being responsive to the load supported by the winder and deactivation of said motor for turning axially on said shaft to interengage said brake components and interlock said ratchet with said pawl, whereby rotation of said tube and said winder are restricted and the lift is held at a selected elevation; said motor operating in a first direction to turn said tube axially relative to said shaft such that said brake components are momentarily disengaged and said tube and winder allow the load to be lowered by the cable, said tube thereafter being responsive to the

supported load for turning on said shaft and re-engaging the brake components so that rotation of the tube and winder and lowering of the lift are controlled; said motor operating in an opposite, second direction to turn said tube axially relative to said shaft such that said brake components are interengaged and said ratchet component disengages and rotates freely of said pawl, whereby said tube and winder rotate to wind cable onto said winder and elevate the lift.

2. The system of claim 1 in which said tube is driven alternately in opposing directions along said shaft to alternately disengage and re-engage said brake components when said motor is operating in the first direction.

3. The system of claim 1 further including a torsion spring interconnecting said shaft and said tube for urging said tube to turn axially relative to said shaft such that said first and second brake components are interengaged and for allowing said tube to turn intermittently in the opposite direction on said shaft when said motor is operating in said first direction.

4. The system of claim 1 in which said first and second brake components comprise a brake rotor and a brake pad, respectively.

5. The system of claim 3 in which said torsion tube includes a longitudinal slot that receives an outer end of the spring.

6. The system of claim 3 in which said spring is a coil spring wound about said shaft and within said tube.

7. The system of claim 3 in which an inner end of said spring is received in a channel in said shaft.

8. The system of claim 3 further including a second torsion spring interconnecting said shaft and said tube for urging said tube to turn on said shaft such that said brake components interengage.

9. The system of claim 1 further including an interiorly threaded nut element mounted within said tube for threadably interconnecting said tube and said threaded shaft.

10. The system of claim 9 in which said first brake component is mounted to said interiorly threaded nut.

11. The system of claim 1 in which said pawl includes a pivotable finger element and a bearing member that is frictionally engagable with said ratchet for pivoting the finger element to selectively engage the ratchet while the motor is deactivated or turning in the first direction.

12. The system of claim 11 in which said ratchet pivots said finger to disengage said ratchet when the motor is operating in the second direction.

13. The system of claim 11 further including a pawl spring for biasing said pawl so that said bearing member engages the ratchet.

14. The system of claim 1 in which said ratchet is mounted rotatably on said shaft.

15. The system of claim 1 in which said tube is operably connected to said winder through a reduction mechanism.

16. A braking system for a motor driven lift, which lift includes a winder having a load supporting lifting cable wound thereon, said braking system comprising:

a axially rotatable, threaded shaft operably connectable to the lift motor for being selectively driven by the motor in a first direction when the motor is operated to lower the lift and in an opposite second direction when the motor is operated to raise the lift;

a torsion tube mounted on and disposed about said shaft; said tube threadably interengaged with said shaft such that said tube is moved longitudinally relative to said shaft when said tube is turned axially about said shaft; said tube being operably interconnectable to the winder through a reduction mechanism such that axial rotation is transmittable between said tube and the winder;

a brake rotor attached to said tube and rotatable about said shaft;

a ratchet component mounted rotatably on said shaft and supporting a brake pad adjacent said brake rotor;

a pawl for cooperating with said ratchet to limit rotation of said ratchet in a first direction about said shaft and permitting rotation of said ratchet in an opposite second direction about said shaft; and

a torsion spring that interconnects said shaft and said tube for urging said tube to turn axially on said shaft such that said brake rotor interengages said brake pad and said ratchet component and said pawl interlock to hold the lift at a predetermined elevation when the motor is deactivated;

said shaft being driven axially rotatably by the motor in one direction to turn said torsion relative to said shaft such that said brake rotor is momentarily

disengaged from said brake pad, said tube during said momentary disengagement being responsive to at least one of said torsion spring and the supported load for turning on said shaft to re-engage said first brake component with said second brake component so that rotation of the winder and lowering of the lift are controlled;

said shaft being driven axially rotatably by the motor in the opposite direction to turn said tube axially on said shaft such that said rotor interengages said pad and said ratchet disengages and rotates freely of said pawl, whereby said tube rotates the winder to elevate the lift.

17. The system of claim 16 in which said tube is driven alternately in opposing directions along said shaft to alternately disengage and re-engage said brake components when said motor is operating in the first direction.

18. The system of claim 16 in which said spring is a coil spring wound about said shaft and within said tube.

19. The system of claim 16 in which said pawl includes a pivotable finger element and a bearing member that is frictionally engagable with said ratchet for pivoting the finger element to selectively engage the ratchet while the motor is deactivated or turning in the first direction.